

This chapter explains how to run demographic and affordability analyses in the MUNIPAY model. The right-hand side of MUNIPAY's main screen presents various buttons for conducting either a demographic analysis or an affordability analysis. Exhibit 4-1, on the following page, provides an example of the main screen. The two analyses operate completely independently of each other. The following sections describe how to conduct each analysis and interpret its results.

Exhibit 4-1
MAIN SCREEN

MuniPay-[C:\EPAMODS\MUNIPAY\MUNIRUNS]

Case Selection/Construction:
Selected Stoweton
Case:

Census Data Financial Data
Enter/Edit Enter/Edit

Select a case from the list below or press NEW to create a new case.

Henn Pills Enterprise Fund
Pells Hinn Sewer Authority
Stoweton
Yellow County

New Edit Copy Export Delete

Case File	Only Case Description	Entire Case File & Runs
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Analysis Runs:
Affordability Analysis:
Selected Compliance, Superfund, and
Run: Penalty

Run

Select a run from the list below or press NEW to create a new run.

\$2,000,000 superfund
\$2,000,000 superfund w/10% safety fac
Compliance, Superfund, and Penalty

New Edit Copy Delete

Demographic Analysis:

Run

Output Dir.

Help

Data Form

Exit

A. DEMOGRAPHIC ANALYSIS

To run a demographic analysis you simply click on the “Run” button at the bottom of the main screen, in the box titled “Demographic Analysis.” MUNIPAY will then display a table for the

results. Exhibit 4-2 below provides an example.¹ To print your results simply click on the “Print” button. The following sections explain the significance of each result.

Exhibit 4-2

DEMOGRAPHIC ANALYSIS

Demographic Comparison				
Stoweton				
U. S. Census Indicator	U.S. 1990	WI 1990	Stoweton 1990	Stoweton Change from 1980
Population:	248,709,900	4,891,769	50,000	25.0%
Percent population below 18:	25.6%	26.4%	28.0%	3.0% Pts.
Percent population 65 and above:	12.6%	13.3%	24.0%	1.5% Pts.
Percent individuals below 125% of poverty:	17.0%	14.3%	9.8%	-2.7% Pts.
Median Home Value(MHV):	\$79,100	\$62,500	\$70,000	----
MHV- Stoweton as % of WI:	----	----	112.0%	8.3% Pts.
Median Household Income(MHI):	\$30,056	\$29,442	\$40,000	----
MHI- Stoweton as % of WI:	----	----	135.9%	5.8% Pts.

Unlike the Affordability Analysis, the Demographic Analysis does not produce a single point estimate or assessment for the community’s economic health. Instead, it generates comparisons with state and national norms for selected U.S. Census indicators. The Demographic Analysis thereby

¹ Note that the final column displaying the municipality’s change from 1980 generally expresses the results in terms of percentage points (“% Pts.”). Therefore, a change in a value from 10 percent in 1980 to 12 percent in 1990 is a change of two percentage points (“2.0% Pts.”), rather than 20 percent (i.e., $(12/10 - 1) * 100$).

provides more general, background information on the community than the Affordability Analysis's eventual point estimate. The Demographic Analysis can also aid the advanced user (i.e., an analyst familiar with financial economics, especially pertaining to municipalities) in modifying the default parameters for the Affordability Analysis. For example, a 25-percent debt service ratio might be sustainable for a community with a solid resource base, but overly burdensome for a community whose economic health appears to be deteriorating sharply. Remember, however, that the required inputs to the Affordability Analysis include demographic data (e.g., income, population, home value), so the affordability results will always reflect certain aspects of the municipality's demographics.

1. Population

All else being equal, the higher the population the higher the ability to afford a certain level of environmental expenditures. A positive percentage change in population since 1980 is a sign of a growing and probably vibrant community. A negative change, however, is a possible sign of a community in decline, often with accompanying symptoms of economic distress.

2. Population Below 18

A high percentage of the population below 18 years old relative to national and state averages indicates a greater financial burden to households from non-wage earning dependents, and a greater financial burden to municipalities and school districts from provision of services. It can also indicate, however, a younger and therefore growing community. A positive change in this percentage since 1980 is a possible sign of an influx of young families, probably indicating a growing community.

3. Population 65 and Above

A high percentage of the population 65 and above relative to national and state averages possibly indicates a constrained resource base, with many residents on a fixed income. On the other hand, according to some measures, the elderly now constitute society's most economically well-off group. Therefore, depending on the interpretation and the larger context, a growing percentage of the elderly population could indicate either an outflux of younger members from a declining community, or wealthy retirees moving to a desirable community.

4. Percent of Individuals Below 125% of Poverty

A high percentage of individuals below 125% of the poverty level relative to national and state averages indicates a constrained resource base and a greater burden upon municipal services.² A percentage of impoverished individuals that has increased significantly between 1980 and 1990 is a strong indication of economic distress.

5. Median Home Value

A high median home value relative to national and state averages can indicate a relatively prosperous community with a strong property tax base. A community could nevertheless be relatively prosperous and have a low median home value, simply because a more rural landscape keeps land prices low. Thus, you may want to compare home values for the municipality with those in adjacent communities to gain a better understanding of your results.³ A median home value that

² MUNIPAY uses individuals below 125% of the poverty level, instead of simply individuals below poverty (i.e., below 100% of the poverty level), to provide a broader measure of the population living in poor economic circumstances.

³ You can look up U.S. Census data for neighboring communities, or, in some states, (continued...)

has increased significantly between 1980 and 1990 relative to the state average is a strong indication of a growing community.

6. Median Household Income

High median household income relative to national and state averages are an indication of a relatively prosperous community. A community could nevertheless be relatively prosperous despite low income measures if its cost of living is correspondingly low. Thus, you may want to compare income measures for the municipality with those in adjacent communities to gain a better understanding of your results.⁴ Income measures that have increased significantly between 1980 and 1990 relative to the state average are a strong indication of an improving local economy.

B. AFFORDABILITY ANALYSIS

The affordability analysis is more complex than the demographic analysis, and therefore requires more input from the user. The first step is to use the run management buttons in the main screen (see Exhibit 4-1) to create, edit, or copy a run. (You also have the option of deleting a run you no longer need.) Once you have created a run, simply highlight the run title using your mouse, and then click “Run” at the top of the “Affordability Analysis” box.

³ (...continued)

government agencies may be able to provide you with more recent data. Availability, however, varies widely by state.

⁴ As with home value data, you can look up U.S. Census data for neighboring communities, or, in some states, government agencies may be able to provide you with more recent data. Availability, however, varies widely by state.

The following sections explain how to create a run, and then provide help on viewing and interpreting your results.

1. Run Creation

a. Run Description

After you select “Run” in the “Affordability Analysis” box, the “Run Description” screen will appear. Here, you provide certain data inputs describing the level and type of environmental expenditures, and you also have the option of viewing and editing the default values for the affordability analysis’s threshold criteria. Exhibit 4-3 provides an example of the run description screen. The following sections describe each data item in more detail. If an item is inapplicable to your case, simply enter zero.

Exhibit 4-3
RUN DESCRIPTION

Run Description

Date when run was first done: 5/28/98

Run Title: Compliance, Superfund, and Penalty

Analyst Name: Jon Analyt

Compliance capital and one-time costs: \$800,000

Compliance annual expenses:

Superfund cost contribution: \$200,000

Penalty payment: \$25,000

Order of Priority for Expenditures:

1. Compliance
2. Superfund
3. Penalty

Default values for threshold criteria: View/Edit

Cancel Continue Help

Run Title

Enter a title for your run. Any format is acceptable. After you have finished creating the run, this title will appear in the run selection box of the main screen.

Analyst Name

Enter your own name. Any format is acceptable.

Compliance Capital and One-Time Costs

Enter the sum of all capital investments and one-time costs necessary for compliance (e.g., design and construction costs for a wastewater treatment plant). MUNIPAY will assume that this figure is in current dollars.

Compliance Annual Expenses

Enter the average yearly total of all annually recurring expenses necessary for compliance (e.g., annual operation and maintenance costs for a wastewater treatment plant). Do not include interest, other financing expense, or annualized capital recovery expense. MUNIPAY will assume that this figure is in current dollars.

Superfund Cost Contribution

Enter the Superfund cleanup cost contribution that you propose to seek from the municipality.⁵ MUNIPAY will assume that this figure is in current dollars.

Penalty Payment

Enter the penalty payment that you propose to seek from the municipality. MUNIPAY will assume that this figure is in current dollars.

⁵ Cleanup costs under other remediation statutes (e.g., Oil Pollution Act, Underground Storage Tanks, RCRA Corrective Action) should generally be entered under the Compliance Costs category. This is a somewhat moot issue though, since the user can always modify each expenditure category's priority and run parameters.

Order of Priority for Expenditures

If you are seeking more than one type of environmental expenditure, then you may wish to alter the order of prior for expenditures. MUNIPAY's default is to assume that compliance costs have the highest priority, followed by Superfund cost contributions, followed by penalty payment. To alter this default hierarchy, click on each type of expenditure in turn, and then click on the up or down arrow.

Default Values for Run Parameters

The affordability analysis requires certain parameters and threshold criteria, for which it provides default values. Pressing the View/Edit will allow you to view these parameters and criteria, and edit them if you want to provide your own customized values. Exhibit 4-4 and 4-5 provide examples of the run parameters for a city, town, village or county, and for a municipality with an enterprise fund or an independent and publicly owned utility. Generally, you should not modify the default values unless you have a sound reason, or you have consulted a financial analyst. The following sections describe in detail the different sets of run parameters.

Exhibit 4-4

RUN PARAMETERS FOR CITY, TOWN, VILLAGE, OR COUNTY

Affordability Analysis Run Parameters	
Maturity period for bond to finance compliance capital and one-time costs [years]:	25
Maturity period for note to finance Superfund cost contribution [years]:	5
Time period for penalty payment schedule [years]:	3
General obligation debt interest rate for compliance financing [%]:	5.36
General obligation debt interest rate for Superfund financing [%]:	4.81
Federal funds interest rate for penalty payment schedule [%]:	5.43
Minimum value for General Fund unreserved balance as a % of budgeted/anticipated expenditures and net transfers out:	5
Maximum value for increase in property taxes on median home value as a % of median household income:	1.00
Maximum value for debt service ratio [%]:	25
Net Debt Maximum Values: 2.5 x National Median	Edit Net Debt Max. Values

Cancel Print **Continue** Help

National Median-Based Run Parameters			
		National Medians	
Maximum value for direct net debt per capita:	2.5	x 745 =	\$1,863
Maximum value for overall net debt per capita:	2.5	x 1314 =	\$3,285
Maximum value for direct net debt as a % of market value for taxable property:	2.5	x 1.6 =	4.0
Maximum value for overall net debt as a % of market value of taxable property:	2.5	x 2.8 =	7.0

Cancel **Continue** Help

Exhibit 4-5

RUN PARAMETERS FOR MUNICIPALITY WITH ENTERPRISE FUND

Affordability Analysis Run Parameters	
Maturity period for bond to finance compliance capital and one-time costs [years]:	25
Maturity period for note to finance Superfund cost contribution [years]:	5
Time period for penalty payment schedule [years]:	3
Revenue debt interest rate for compliance financing [%]:	5.36
Revenue debt interest rate for Superfund financing [%]:	4.81
Federal funds interest rate for penalty payment schedule [%]:	5.43
Minimum value for General Fund unrestricted balance as a % of budgeted/anticipated expenditures and net transfers out:	5
Minimum value for Enterprise Fund working capital as a % of budgeted/anticipated expenses and net transfers out:	5
Maximum value for increase in user charges on 90,000 gallon consumption as a % of median household income:	1.00
Maximum value for total user charges on 90,000 gallon consumption as a % of median household income:	2.00
Minimum value for debt service coverage ratio [%]:	120
Maximum value for debt-to-equity ratio [%]:	200

Cancel Print Continue Help

b. Run Parameters for City, Town, Village, or County

Maturity Period for Bond to Finance Compliance Capital and One-Time Costs

This entry defines the maturity period of the bond used to finance capital and one-time costs for compliance. The default value is 25 years.

Generally, the maturity period of a bond should not exceed the life of the funded project. A longer maturity period will lower the annual debt repayment burden but also increase the total

interest payments, with the net effect possibly increasing the affordability.⁶ A longer maturity period will also extend the annual repayment burden (even though it is lower) over a longer period of time, an important economic burden that is not a direct factor in the affordability calculations.⁷

The default value reflects the upper end of the useful life of a typical pollution control investment. The maximum value that the model will accept for the maturity period is 30 years.

Maturity Period for Bond to Finance Superfund Cost Contribution

This entry defines the maturity period of the bond (or note) used to finance the Superfund cleanup cost contribution. The default value is five years.

Generally the maturity period of a bond should not exceed the life of the funded project. A longer maturity period will lower the annual debt repayment burden but also increase the total interest payments, with the net effect possibly of increasing the affordability. A longer maturity

⁶ The net effect of changes in this and other parameters only “possibly” increases the affordability because this particular threshold criteria may not be a binding constraint upon the municipality’s ability to issue additional debt. Most of the MUNIPAY run parameters function independently of each other, and the constraint that is binding will depend on the particular set of financial data inputs. For example, selecting a maturity period of 25 years may allow a \$1 million bond, whereas a 30-year maturity period may allow a \$1.1 million bond. At the same time, however, one of the net debt ratio parameters may limit the bond to only \$900,000, so the selection of the maturity period ultimately has no effect upon the affordability result.

⁷ This is a burden because it extends the period over which the municipality is able to assume less debt for other expenditures. For example, a 25-year maturity period means that the municipality will be using a portion of its taxing and debt repayment capacity for the environmental expenditures at issue, making that portion unavailable for other purposes over a period of 25 years. A 30-year maturity period would further decrease the availability of taxing and debt repayment capacity by an additional five years.

period will also extend the annual repayment burden (even though it is lower) over a longer period of time, an important economic burden that is not a direct factor in the affordability calculations.⁸

The default value of five years, however, limits the annual debt repayment burden to a fairly short period of time, much shorter than the life of the typical remediation project. The intent is to create a less burdensome standard for Superfund affordability relative to compliance cost affordability. The maximum value that the model will accept for the maturity period is 30 years.

Time Period for Penalty Payment Schedule

This entry defines the length of the payment schedule for the penalty. The default value is three years.

A longer time period will lower the annual payment burden but also increase the total interest payments, with the net effect possibly of increasing the affordability. A longer time period will also extend the annual payment burden (even though it is lower) over a longer period of time, an important economic burden that is not a direct factor in the affordability calculations.⁹

The default value of three years reflects the length of a typical penalty payment schedule. The maximum value that the model will accept is five years.

⁸ This is a burden because it extends the period over which the municipality is able to assume less debt for other expenditures. See footnote 7 for more details.

⁹ This is a burden because it extends the period over which the municipality is able to assume less debt for other expenditures. See footnote 7 for more details.

General Obligation Debt Interest Rate for Compliance Financing

MUNIPAY automatically derives the interest rate on general obligation debt for the financing of compliance costs from one of its internal lookup tables. The lookup table contains default value interest rates as a function of the maturity period and debt rating. If you have specific information about the municipality's interest rates for recent debt issues, you can enter a custom value. Alternatively, since the data in the lookup table is updated only annually, you may wish to obtain the current interest rates for different combinations of maturity period and debt rating from the Rating Desk at Moody's Investor Services (212/553-0315), from the current issue of the *Federal Reserve Bulletin*, Table 1.35 (Interest Rates), lines 30-32, or from the Federal Reserve web site (<http://www.bog.frb.fed.us>).¹⁰ Also, in the business section of most newspapers you can find a composite interest rate for municipal bonds, representing an average of various maturity periods and ratings.

General Obligation Debt Interest Rate for Superfund Financing

MUNIPAY automatically derives the interest rate on general obligation debt for the financing of the Superfund cleanup cost contribution from one of its internal lookup tables. The lookup table contains default value interest rates as a function of the maturity period and debt rating. If you have specific and current information about the municipality's interest rates for recent debt issues, you can enter a custom value. Alternatively, since the data in the lookup table is updated only annually, you may wish to obtain the current interest rates for different combinations of maturity period and debt rating from the Rating Desk at Moody's Investor Services (212/553-0315), from the current issue of the *Federal Reserve Bulletin*, Table 1.35 (Interest Rates), lines 30-32, or from the Federal

¹⁰ Moody's tracks interest rates for 20-year municipal bonds with Aaa, Aa, A, and Baa ratings, and 10-year municipal bonds with Aaa and Aa ratings. (You will have to perform a reasonable extrapolation for 10-year bonds with A and Baa ratings.) Table 1.35 of the *Federal Reserve Bulletin* tracks interest rates for 20-year municipal bonds with ratings of Aaa on line 30, Baa on line 31, and A on line 32.

Reserve web site (<http://www.bog.frb.fed.us>).¹¹ Also, in the business section of most newspapers you can find a composite interest rate for municipal bonds, representing an average of various maturity periods and ratings.

Federal Funds Interest Rate for Penalty Payment Schedule

The default value for the interest rate of the penalty payment schedule is the Federal Funds rate. Since this value is updated only annually, you may wish to obtain the most up-to-date value from the business section of most newspapers.

Minimum Value for General Fund Unreserved Balance as a % of Budgeted/Anticipated Expenditures and Net Transfers Out

The default value is five percent for the minimum value of the General Fund unreserved balance as a percentage of budgeted/anticipated expenditures and net transfers out. Any portion of the unreserved fund balance above this amount is considered currently available for environmental expenditures. The default value is based upon recommendations from the public finance and management literature.¹² The higher the value, the lower the ability to pay might be. The model will not accept a value below the default of five percent.

¹¹ See footnote 10 for more details.

¹² Moody's Investors Services, *Moody's on Municipals: An Introduction to Issuing Debt* (1991), p. 27; Freda S. Johnson, "Credit Fundamentals — The Rating Agency Perspective," *The Handbook of Municipal Bonds and Public Finance*, eds. Robert Lamb, James Leigland, and Stephen Rappaport (1993), p. 124; Claire Gorham Cohen, "Analyzing Government Credit," *The Handbook of Municipal Bonds and Public Finance*, eds. Robert Lamb, James Leigland, and Stephen Rappaport (1993), p. 134; Lon Sprecher, "Operating Budgets," *Local Government Finance: Concepts and Practices*, eds. John E. Petersen and Dennis R. Strachota (1991), p. 62; Robert N. Anthony and David W. Young, *Management Control in Nonprofit Organizations* (1988), p. 540.

You should increase this value only if you believe the municipality's revenues and/or expenditures are subject to significantly higher than average variability (e.g., a significant portion of revenues from a tax with an unstable base, frequent weather emergencies that lead to unexpected expenditures, etc.). Such variability could justify the maintenance of a fund balance exceeding five percent to cover revenue shortfalls or emergency expenditures. You would therefore enter a value above five percent to reflect the municipality's particular situation.

***Maximum Value for Property Tax Increase
as a % of Median Household Income***

The default value is 1.0 percent for the maximum value of a property tax increase on the median home value as a percentage of median household income. MUNIPAY calculates the additional annual user property taxes that the median homeowner will need to pay for the municipality to finance the environmental expenditures, and checks that these annual property taxes do not exceed the specified percentage of median household income. The higher the threshold value, the higher the ability to pay might be. The intent of the default value is to correspond very roughly with the recommended maximum user fee burdens for households under various EPA policy guidelines.¹³ The model will accept any value.

¹³ For a summary of these, see *Evaluating Municipal Environmental Burdens*, prepared for the U.S. EPA Office of Policy, Planning, and Evaluation, by The Cadmus Group, Inc., September 30, 1994. See also U.S. EPA Office of Water, *Combined Sewer Overflows — Guidance for Financial Capability Assessment and Schedule Development*, March 1997; and U.S. EPA Region V Water Division, *Interim Procedures for Conducting Municipal Financial Capability Analysis in Support of Water Enforcement Actions*, June 1997.

Maximum Value for Debt Service Ratio

The default value is 25 percent for the debt service ratio, which divides the total debt service payments (principal and interest) of all governmental funds by their total revenues. The calculations for future financing of environmental expenditures limit additional debt issuance such that its repayment would not result in a higher than specified debt service ratio. The higher the value, the higher the ability to pay might be.

The default value slightly exceeds the “warning marks” found in the public finance and management literature.¹⁴ A municipality can maintain a higher level of debt service, but a higher level may reduce the confidence of creditors that the municipality can repay its debt on time. This reduction in confidence could make it more difficult for the municipality to borrow funds in the future.

¹⁴ George G. Kaufmann and Philip J. Fischer, “Debt Management,” in *Management Policies in Local Government Finance*, eds. J. Richard Aronson and Eli Schwartz, p. 300; Sanford M. Groves and Maureen Godsey Valente, *Evaluating Financial Condition: A Handbook for Local Government*, p. 88; Standard and Poor’s Corporation, *S&P’s Municipal Finance Criteria* (1998), p. 21.

Net Debt Ratios

Maximum Value for Direct Net Debt per Capita

Maximum Value for Overall Net Debt per Capita

Maximum Value for Direct Net Debt as a % of Market Value for Taxable Property

Maximum Value for Overall Net Debt as a % of Market Value for Taxable Property

The four net debt ratios are indicators of the relative level of the municipality's current debt burden. The default values are equal to 2.5 times the medians for a population-specific national sample. If you want to change these values, you can specify either a new multiplier (i.e., the 2.5 default value) or a new end value (i.e., the product of the multiplier and the national median). You can change the multiplier simultaneously for all four ratios, or you can click on the button to the right and modify each ratio's value independently.

The calculations for future financing of environmental expenditures limit additional debt issuance such that it does not result in ratios higher than the specified values. The higher the value, the higher the ability to pay might be. The public finance and management literature generally recommends that the ratio for overall net debt as a percentage of market value for taxable property not exceed 10 to 12 percent.¹⁵ Recommendations for the other three net debt ratios are not as universal, but in general having the same multipliers of the national medians for all four ratios is appropriate.

¹⁵ George G. Kaufmann and Philip J. Fischer, "Debt Management," in *Management Policies in Local Government Finance*, eds. J. Richard Aronson and Eli Schwartz, p. 300; Sanford M. Groves and Maureen Godsey Valente, *Evaluating Financial Condition: A Handbook for Local Government*, p. 85; Robert Berne and Richard Schramm, *The Financial Analysis of Government*, p. 260; Moody's Investor Services, *Pitfalls in Issuing Municipal Securities*, p. 19.

**c. Run Parameters for Enterprise Fund or
Independent and Publicly Owned Utility**

Maturity Period for Bond to Finance Compliance Capital and One-Time Costs

This entry defines the maturity period of the bond used to finance capital and one-time costs for compliance. The default value is 25 years.

Generally, the maturity period of a bond should not exceed the life of the funded project. A longer maturity period will lower the annual debt repayment burden but also increase the total interest payments, with the net effect possibly increasing the affordability.¹⁶ A longer maturity period will also extend the annual repayment burden (even though it is lower) over a longer period of time, an important economic burden that is not a direct factor in the affordability calculations.¹⁷

The default value reflects the upper end of the useful life of a typical pollution control investment. The maximum value that the model will accept for the maturity period is 30 years.

Maturity Period for Bond to Finance Superfund Cost Contribution

This entry defines the maturity period of the bond (or note) used to finance the Superfund cleanup cost contribution. The default value is five years.

¹⁶ The net effect may only “possibly” increase the affordability because this particular threshold criteria may not be a binding constraint upon the municipality’s ability to issue additional debt. See footnote 6 for a more detailed explanation.

¹⁷ This is a burden because it extends the period over which the municipality is able to assume less debt for other expenditures. See footnote 7 for more details.

Generally the maturity period of a bond should not exceed the life of the funded project. A longer maturity period will lower the annual debt repayment burden but also increase the total interest payments, with the net effect possibly of increasing the affordability. A longer maturity period will also extend the annual repayment burden (even though it is lower) over a longer period of time, an important economic burden that is not a direct factor in the affordability calculations.¹⁸

The default value of five years, however, limits the annual debt repayment burden to a fairly short period of time, much shorter than the life of the typical remediation project. This is an EPA-driven default intended to create a less onerous standard for Superfund affordability relative to compliance cost affordability. The maximum value that the model will accept for the maturity period is 30 years.

Time Period for Penalty Payment Schedule

This entry defines the length of the payment schedule for the penalty. The default value is three years.

A longer time period will lower the annual payment burden but also increase the total interest payments, with the net effect possibly of increasing the affordability. A longer time period will also extend the annual payment burden (even though it is lower) over a longer period of time, an important economic burden that is not a direct factor in the affordability calculations.¹⁹

The default value of three years reflects the length of the typical penalty payment schedule. The maximum value that the model will accept is five years.

¹⁸ This is a burden because it extends the period over which the municipality is able to assume less debt for other expenditures. See footnote 7 for more details.

¹⁹ This is a burden because it extends the period over which the municipality is able to assume less debt for other expenditures. See footnote 7 for more details.

Revenue Debt Interest Rate for Compliance Financing

MUNIPAY automatically derives the interest rate on revenue debt for the financing of compliance costs from one of its internal lookup tables. The lookup table contains interest rates as a function of the maturity period and debt rating. If you have specific and current information about the municipality's interest rates for recent debt issues, you can enter a custom value. Alternatively, since the data in the lookup table is updated only annually, you may wish to obtain the current interest rates for different combinations of maturity period and debt rating from the Rating Desk at Moody's Investor Services (212/553-0315), from the current issue of the *Federal Reserve Bulletin*, Table 1.35 (Interest Rates), lines 30-32, or from the Federal Reserve web site (<http://www.bog.frb.fed.us>).²⁰ Also, in the business section of most newspapers you can find a composite interest rate for municipal bonds, representing an average of various maturity periods and ratings.

Revenue Debt Interest Rate for Superfund Financing

MUNIPAY automatically derives the interest rate on revenue debt for the financing of the Superfund cleanup cost contribution from one of its internal lookup tables. The lookup table contains interest rates as a function of the maturity period and debt rating. If you have specific and current information about the municipality's interest rates for recent debt issues, you can enter a custom value. Alternatively, since the data in the lookup table is updated only annually, you may wish to obtain the current interest rates for different combinations of maturity period and debt rating from the Rating Desk at Moody's Investor Services (212/553-0315), from the current issue of the *Federal Reserve Bulletin*, Table 1.35 (Interest Rates), lines 30-32, or from the Federal Reserve web

²⁰ See footnote 10 for more details.

site (<http://www.bog.frb.fed.us>).²¹ Also, in the business section of most newspapers you can find a composite interest rate for municipal bonds, representing an average of various maturity periods and ratings.

Federal Funds Interest Rate for Penalty Payment Schedule

The default value for the interest rate of the penalty payment schedule is the Federal Funds rate. Since this value is updated only annually, you may wish to obtain the most up-to-date value from the business section of most newspapers.

Minimum Value for General Fund Unreserved Balance as a % of Budgeted/Anticipated Expenditures and Net Transfers Out²²

The default value is five percent for the minimum value of the General Fund unreserved balance as a percentage of budgeted/anticipated expenditures and net transfers out. Any portion of the unreserved fund balance above this amount is considered currently available for environmental expenditures. The default value is based upon recommendations from the public finance and

²¹ See footnote 10 for more details.

²² This entry does not appear for an independent and publicly owned utility.

management literature.²³ The higher the value, the lower the ability to pay might be. The model will not accept a value below the default of five percent.

You should increase this value only if you believe the municipality's revenues and/or expenditures are subject to significantly higher than average variability (e.g., a significant portion of revenues from a tax with an unstable base, frequent weather emergencies that lead to unexpected expenditures, etc.). Such variability could justify the maintenance of a fund balance exceeding five percent to cover revenue shortfalls or emergency expenditures. You would therefore enter a value above five percent to reflect the municipality's particular situation.

***Minimum Value for Enterprise Fund Working Capital as a
% of Budgeted/Anticipated Expenses and Net Transfers Out***

The default value is five percent for the minimum value of the enterprise fund working capital balance as a percentage of budgeted/anticipated expenditures and net transfers out. Any portion of the working capital balance above this amount is considered currently available for environmental expenditures. The default value is based upon recommendations from the public finance and management literature. The higher the value, the lower the ability to pay might be. The model will not accept a value below the default of five percent.

You should increase this value only if you believe the enterprise fund's revenues and/or expenditures are subject to significantly higher than average variability (e.g., a significant portion

²³ Moody's Investors Services, *Moody's on Municipals: An Introduction to Issuing Debt* (1991), p. 27; Freda S. Johnson, "Credit Fundamentals — The Rating Agency Perspective," *The Handbook of Municipal Bonds and Public Finance*, eds. Robert Lamb, James Leigland, and Stephen Rappaport (1993), p. 124; Claire Gorham Cohen, "Analyzing Government Credit," *The Handbook of Municipal Bonds and Public Finance*, eds. Robert Lamb, James Leigland, and Stephen Rappaport (1993), p. 134; Lon Sprecher, "Operating Budgets," *Local Government Finance: Concepts and Practices*, eds. John E. Petersen and Dennis R. Strachota (1991), p. 62; Robert N. Anthony and David W. Young, *Management Control in Nonprofit Organizations* (1988), p. 540.

of revenues from user fees from an unstable source, frequent weather emergencies that lead to unexpected expenditures, etc.). Such variability could justify the maintenance of a working capital balance exceeding five percent to cover revenue shortfalls or emergency expenditures. You would therefore enter a value above five percent to reflect the municipality's particular situation.

***Maximum Value for Increase in User Charges on
90,000 Gallon Consumption as a % of Median Household Income***

The default value is 1.0 percent for the maximum value of a user charge increase on 90,000 gallon consumption as a percentage of median household income. (The 90,000 gallon level is a standard approximation of typical household water or wastewater use. If the enterprise fund is not a water or wastewater fund, then the user charges represent the municipality's estimate of a typical household bill.)

MUNIPAY calculates the additional annual user charges that the average household will need to pay for the municipality to finance the environmental expenditures, and checks that these annual user charges do not exceed the specified percentage of median household income. The higher the threshold value, the higher the ability to pay might be.

The intent of the default value is to correspond very roughly with the recommended maximum user fee burdens for households under various EPA policy guidelines.²⁴ The model will accept any value.

²⁴ For a summary of these, see *Evaluating Municipal Environmental Burdens*, prepared for the U.S. EPA Office of Policy, Planning, and Evaluation, by The Cadmus Group, Inc., September 30, 1994. See also U.S. EPA Office of Water, *Combined Sewer Overflows — Guidance for Financial Capability Assessment and Schedule Development*, March 1997; and U.S. EPA Region V Water Division, *Interim Procedures for Conducting Municipal Financial Capability Analysis in Support of Water Enforcement Actions*, June 1997.

***Maximum Value for Total User Charges on
90,000 Gallon Consumption as a % of Median Household Income***

The default value is 2.0 percent for the maximum value of total user charges on 90,000 gallon consumption as a percentage of median household income. (The 90,000 gallon level is a standard approximation of typical household water or wastewater use. If the enterprise fund is not a water or wastewater fund, then the user charges represent the municipality's estimate of a typical household bill.)

MUNIPAY calculates the total annual user charges that the average household will need to pay for the municipality to finance the environmental expenditures, and checks that these annual user charges do not exceed the specified percentage of median household income. The higher the threshold value, the higher the ability to pay is likely to be.

The intent of the default value is to correspond very roughly with the recommended maximum user fee burdens for households under various EPA policy guidelines.²⁵ The model will accept any value.

Minimum Value for Debt Service Coverage Ratio

The minimum value is 120 percent for the debt service coverage ratio. The debt service coverage ratio divides net operating revenue (total operating expenses minus revenue) by annual principal and interest payments. This ratio determines affordability in conjunction with the user charge burden ratios. MUNIPAY calculates the user charge increase that is necessary to cover the

²⁵ For a summary of these, see *Evaluating Municipal Environmental Burdens*, prepared for the U.S. EPA Office of Policy, Planning, and Evaluation, by The Cadmus Group, Inc., September 30, 1994. See also U.S. EPA Office of Water, *Combined Sewer Overflows — Guidance for Financial Capability Assessment and Schedule Development*, March 1997; and U.S. EPA Region V Water Division, *Interim Procedures for Conducting Municipal Financial Capability Analysis in Support of Water Enforcement Actions*, June 1997.

debt service for the environmental expenditures at the level this value specifies, and then checks if this user charge increase falls within the values the user charge burden ratios specify.

The default value represents an adequate yet not excessive coverage of debt service requirements.²⁶ The model will accept any value from 100 to 160.

Maximum Value for Debt-to-Equity Ratio

The maximum value is 200 percent for the debt-to-equity ratio. The debt-to-equity ratio divides total debt by total equity (assets minus debt). The calculations for future financing of environmental expenditures limit additional debt issuance such that it will not cause the debt-to-equity ratio to exceed the specified value.

The default value represents a debt-to-equity ratio that would be quite high for a for-profit company and at the high end of actual municipal enterprise funds.²⁷ Even higher values, however, are feasible without necessarily leading to severe fiscal problems, although an enterprise fund's credit rating could suffer from an exceedingly high debt-to-equity ratio. The model will accept any value.

²⁶ Moody's Investors Services, *Moody's on Municipals: An Introduction to Issuing Debt* (1991), p. 26; David Ambler, James Burr, Katherine McManus, Howard Mischel, and Diana Roswick, "Revenue Bond Credit Analysis," *The Handbook of Municipal Bonds and Public Finance*, eds. Robert Lamb, James Leigland, and Stephen Rappaport (1993), p. 154; John E. Petersen and Thomas McLoughlin, "Debt Policies and Procedures," *Local Government Finance: Concepts and Practices*, eds. John E. Petersen and Dennis R. Strachota (1991), p. 278; Standard and Poor's Corporation, *S&P's Municipal Finance Criteria* (1998), p. 102.

²⁷ Clyde P. Stickney, *Financial Statement Analysis: A Strategic Perspective*, p. 240.

2. Viewing and Interpreting Results

To perform an affordability analysis, use your mouse to highlight the case title. Then click the “Run” button. The first screen you will see is the affordability analysis summary. The following sections describe this first screen and the other screens that you can view.

a. Affordability Analysis Summary

Exhibit 4-6 provides an example of the affordability analysis summary. The three rows in the table at the top of the screen correspond to the three types of environmental expenditures. The first column displays the amount sought for each type of expenditure. The second column displays the amount of funds that are currently available to pay for the expenditures. (An analysis for a municipality with an enterprise fund would instead display two separate columns for enterprise funds currently available and for General Funds currently available.) The third column displays the funds that are available through financing. The final column displays the total available, which simply adds together the second and third columns.

Exhibit 4-6

AFFORDABILITY ANALYSIS SUMMARY

	Amount Sought	Funds Currently Available	Available Through Financing	Total Available
Compliance Expenditures	\$800,000	\$752,148	\$47,852	\$800,000
Superfund Cleanup Costs	\$200,000	\$0	\$200,000	\$200,000
Penalty Payment	\$25,000	\$0	\$25,000	\$25,000

View Details On:

- ☒ Currently Available Funds Calculation
- ☐ Compliance Debt Financing
- ☐ Superfund Debt Financing
- ☐ Penalty Payment Schedule

Print Options:

- ☒ Financial Data
- ☒ Run Parameters
- ☒ Detailed Calculations
- ☒ Analysis Summary

Buttons: View, Print, Exit Analysis, Help

If the amount in the final column is equal to the sought amount in the first column, then the sought amount is affordable within the specified run parameters. If the amount in the final column is less than the sought amount, then the sought amount is not affordable within the specified run parameters, and the amount in the final column is instead the maximum affordable amount.

The box in the bottom left of the screen allows you to view the details on the currently available funds calculations and the debt financing or payment schedule for the sought types of environmental expenditures. (The selection for types of expenditures that are not sought will be

“grayed-out.”) To view a set of details, simply move your mouse to click on the desired option, and then click “View.” The following sections explain how to interpret these screens.

The box in the bottom right of the screen allows you to print your data and results. Use your mouse to click in the check-boxes of the screens you want to select, then click on “Print.” You can also print these screens using the standard “Print” from within each individual screen.

b. Currently Available Funds Calculation

Exhibit 4-7 provides an example of the screen for a currently available funds calculation for a city, town, village or county. The recommended unreserved General Fund balance is equal to the budgeted/anticipated expenditures plus net transfers out times the safety factor (whose default value is five percent). MUNIPAY subtracts the recommended balance from the unreserved balance to determine the total amount of currently available funds. If you maintain MUNIPAY’s default priorities, these funds first pay for compliance costs, then a Superfund cost contribution, and finally a penalty payment. If you alter the priority, the funds will be allocated by the order of your priorities.

Exhibit 4-7
CURRENTLY AVAILABLE FUNDS CALCULATION FOR
CITY, TOWN, VILLAGE, OR COUNTY

Entity: Stowetown
Run: Compliance, Superfund, and Penalty

General Fund Balance

Unreserved General Fund Balance	\$1,564,011
Recommended Balance	\$811,863
Total Currently Available Funds	\$752,148
Amount Available and Needed for Compliance	\$752,148
Amount Available and Needed for Superfund	\$0
Amount Available and Needed for Penalty	\$0

Print Return Help

For a case with a relevant enterprise fund, Exhibit 4-8 provides an example of the screen for the currently available funds calculation.²⁸ The table format for the General Fund balance is the same as in Exhibit 4-7. The screen adds an additional table for enterprise fund working capital. Working capital is equal to the enterprise fund's current assets minus its current liabilities. The table is otherwise the same as that for the General Fund.

For an independent and publicly owned utility, the currently available funds screen would be identical to that for the municipality with an enterprise fund, minus the table for the General Fund.

²⁸ MUNIPAY selects the appropriate screen automatically, based upon the municipality type that the user specified when first creating the case.

Exhibit 4-8

**CURRENTLY AVAILABLE FUNDS CALCULATION FOR
MUNICIPALITY WITH ENTERPRISE FUND**

Currently Available Funds Calculation		
Entity: Henn Pills Enterprise Fund Run: Compliance, Superfund, and Penalty		
<u>Enterprise Fund Working Capital</u>	Working Capital	\$446,144
	Recommended Balance	\$406,996
	Total Currently Available Funds	\$39,148
	Amount Available and Needed for Compliance	\$39,148
	Amount Available and Needed for Superfund	\$0
	Amount Available and Needed for Penalty	\$0
<u>General Fund Balance</u>	Unreserved General Fund Balance	\$1,564,011
	Recommended Balance	\$811,863
	Total Currently Available Funds	\$752,148
	Amount Available and Needed for Compliance	\$752,148
	Amount Available and Needed for Superfund	\$0
	Amount Available and Needed for Penalty	\$0
<input type="button" value="Print"/> <input type="button" value="Return"/> <input type="button" value="Help"/>		

c. Debt Financing and Payment Schedule

Exhibit 4-9 provides an example of the screen for debt financing of compliance costs, in a case involving a city, town, village, or county. The rows correspond to the different financial criteria. The first column displays the existing values for the criteria. This allows the user to examine the current financial condition of the municipality before it must pay for environmental expenditures. The second column displays the projected values for the criteria were the municipality to pay for the full amount of the sought compliance costs, which is displayed in units corresponding to thousands of dollars. (Some of the payment for the sought compliance costs could include the

previously calculated currently available funds, which the criteria values reflect but the column headings do not.) The third column displays the threshold values for the criteria. The threshold values are either the default values or the custom values that the user specified in the run parameters screen. (The threshold value for the direct debt level is equal to the state limit, which the municipality supplies on its data request form and the user then enters in the financial data screen, not the run parameters screen.)

Exhibit 4-9
COMPLIANCE DEBT FUNDING DETAILS FOR
CITY, TOWN, VILLAGE, OR COUNTY

Compliance Expenditures Worksheet				
Entity: Stowetown				
Run: Compliance, Superfund, and Penalty				
<i>(Dollar amounts include funds currently available and are displayed in thousands.)</i>				
	Existing Value	Projected Value for \$800 Sought Compliance	Threshold Value	Projected Value for \$800 Affordable Compliance
Direct net debt (millions); Threshold=State Limit	\$16.1m	\$16.1m	\$43.1m	\$16.1m
Direct net debt per capita	\$313	\$314	\$1,863	\$314
Overall net debt per capita	\$313	\$314	\$3,285	\$314
Direct net debt to property value	1.6%	1.6%	4.0%	1.6%
Overall net debt to property value	1.6%	1.6%	7.0%	1.6%
Debt service ratio	5%	5%	25%	5%
Incremental property tax burden	N/A	0.00%	1.00%	0.00%

If the projected values from the sought compliance amount all fall within the threshold values, then the sought amount is affordable within the specified run parameters. Therefore the final column for the maximum compliance amount essentially repeats the second column. If the projected values exceed any of the threshold values, then the sought amount is not affordable within the specified run parameters. Therefore the final column displays the values for a maximum compliance amount that is less than the sought amount.

Exhibit 4-10 provides an example of the screen for debt financing of compliance costs for a municipality with a relevant enterprise fund or for an independent and publicly owned utility. The screen is essentially the same as Exhibit 4-9, except the rows display the criteria that are relevant to the revenue debt of an enterprise fund, as opposed to the general obligation debt of a municipality. Note that the projected values for the debt service coverage ratio are always equal to the threshold value, regardless of the existing value or level of compliance costs. This is because MUNIPAY always raises (or lowers) the existing debt service coverage ratio to its threshold value, and then determines whether the user charges fall within the values for household burdens.

Exhibit 4-10

**COMPLIANCE DEBT FUNDING DETAILS FOR
MUNICIPALITY WITH ENTERPRISE FUND OR
FOR INDEPENDENT AND PUBLICLY OWNED UTILITY**

Compliance Expenditures Worksheet

Entity: Henn Pills Enterprise Fund
 Run: Compliance, Superfund, and Penalty

(Dollar amounts include funds currently available and are displayed in thousands.)

	Existing Value	Projected Value for \$1,500 Sought Compliance	Threshold Value	Projected Value for \$1,500 Affordable Compliance
User fee increase as % of MHI	N/A	0.43%	1.00%	0.43%
Total user fees as % of MHI	1.28%	1.71%	2.00%	1.71%
Debt service coverage ratio	1%	120%	120%	120%
Debt-to-equity ratio	108%	109%	200%	109%

Note that both sought and affordable calculations account for full amount of the sought \$1,000 in compliance annual expenses.

Print
Return
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Exhibit 4-11 provides an example of debt financing for a Superfund cleanup contribution for a city, town, village, or county. The table has essentially the same structure as Exhibit 4-9, except that in addition to the first column for the existing values it also displays a column for the projected values from the maximum affordable compliance cost amount. The column is the same as the final column from Exhibit 4-9, and thus Exhibit 4-11 essentially picks up where Exhibit 4-9 left off, i.e.,

taking the financing of the maximum affordable compliance cost amount as the new baseline on top of which to add the sought Superfund contribution financing. The screen therefore shows how the new debt issue for a Superfund cleanup contribution must come on top of the new debt issue that is necessary for the compliance costs. Therefore, less debt capacity is left for the Superfund contribution.

Exhibit 4-11
SUPERFUND DEBT FINANCING DETAILS FOR
CITY, TOWN, VILLAGE, OR COUNTY

Superfund Costs Worksheet					
Entity: Stoweton					
Run: Compliance, Superfund, and Penalty					
<i>(Dollar amounts include funds currently available and are displayed in thousands.)</i>					
	Existing Value	Projected Value for \$800 Affordable Compliance	Projected Value for \$800 Affordable Compliance & \$200 Sought Superfund	Threshold Value	Projected Value for \$800 Affordable Compliance & \$200 Affordable Superfund
Direct net debt (millions); Threshold=State Limit	\$16.1m	\$16.1m	\$16.3m	\$43.1m	\$16.3m
Direct net debt per capita	\$313	\$314	\$318	\$1,863	\$318
Overall net debt per capita	\$313	\$314	\$318	\$3,285	\$318
Direct net debt to property value	1.6%	1.6%	1.7%	4.0%	1.7%
Overall net debt to property value	1.6%	1.6%	1.7%	7.0%	1.7%
Debt service ratio	5%	5%	5%	25%	5%
Incremental property tax burden	N/A	0.00%	0.01%	1.00%	0.01%

Exhibit 4-12 provides an example of a penalty payment schedule for a city, town, village, or county. The table follows the pattern of Exhibit 4-11, adding on the debt from compliance costs and the Superfund contribution before assessing the penalty payment schedule. Therefore, even less debt capacity is left for the penalty payment.

Exhibit 4-12
PENALTY PAYMENT SCHEDULE DETAILS FOR
CITY, TOWN, VILLAGE, OR COUNTY

Penalty Payment Worksheet						
Entity: Stoweton						
Run: Compliance, Superfund, and Penalty						
<i>(Dollar amounts include funds currently available and are displayed in thousands.)</i>						
	Existing Value	Projected Value for \$800 Affordable Compliance	Projected Value for \$800 Affordable Compliance & \$200 Affordable Superfund	Projected Value for \$800 Affordable Compliance & \$200 Affordable Superfund & \$25 Sought Penalty	Threshold Value	Projected Value for \$800 Affordable Compliance & \$200 Affordable Superfund & \$25 Affordable Penalty
Direct net debt (millions); Threshold=State Limit	\$16.1m	\$16.1m	\$16.3m	\$16.4m	\$43.1m	\$16.4m
Direct net debt per capita	\$313	\$314	\$318	\$318	\$1,863	\$318
Overall net debt per capita	\$313	\$314	\$318	\$318	\$3,285	\$318
Direct net debt to property value	1.6%	1.6%	1.7%	1.7%	4.0%	1.7%
Overall net debt to property value	1.6%	1.6%	1.7%	1.7%	7.0%	1.7%
Debt service ratio	5%	5%	5%	5%	25%	5%
Incremental property tax burden	N/A	0.00%	0.01%	0.01%	1.00%	0.01%

Exhibit 4-13 and 4-14 provide the analogous screens for a municipality with an enterprise fund or for an independent and publicly owned utility. The analysis uses a different set of criteria, but the results format and overall methodology are the same.

Exhibit 4-13

**SUPERFUND DEBT FINANCING DETAILS FOR
MUNICIPALITY WITH ENTERPRISE FUND OR
FOR INDEPENDENT AND PUBLICLY OWNED UTILITY**

Superfund Costs Worksheet
X

Entity: Henn Pills Enterprise Fund
 Run: Compliance, Superfund, and Penalty

(Dollar amounts include funds currently available and are displayed in thousands.)

	Existing Value	Projected Value for \$1,500 Affordable Compliance	Projected Value for \$1,500 Affordable Compliance & \$500 Sought Superfund	Threshold Value	Projected Value for \$1,500 Affordable Compliance & \$500 Affordable Superfund
User fee increase as % of MHI	N/A	0.43%	0.45%	1.00%	0.45%
Total user fees as % of MHI	1.28%	1.71%	1.73%	2.00%	1.73%
Debt service coverage ratio	1%	120%	120%	120%	120%
Debt-to-equity ratio	108%	109%	110%	200%	110%

Note that both sought and affordable calculations account for full amount of the sought \$1,000 in compliance annual expenses.

Print
Return
Help

Exhibit 4-14

PENALTY PAYMENT SCHEDULE DETAILS FOR

MUNICIPALITY WITH ENTERPRISE FUND

OR FOR INDEPENDENT AND PUBLICLY OWNED UTILITY

Penalty Payment Worksheet ✕						
Entity: Stowetown Run: Compliance, Superfund, and Penalty						
<i>(Dollar amounts include funds currently available and are displayed in thousands.)</i>						
	Existing Value	Projected Value for \$800 Affordable Compliance	Projected Value for \$800 Affordable Compliance & \$200 Affordable Superfund	Projected Value for \$800 Affordable Compliance & \$200 Affordable Superfund & \$25 Sought Penalty	Threshold Value	Projected Value for \$800 Affordable Compliance & \$200 Affordable Superfund & \$25 Affordable Penalty
Direct net debt (millions); Threshold=State Limit	\$16.1m	\$16.1m	\$16.3m	\$16.4m	\$43.1m	\$16.4m
Direct net debt per capita	\$313	\$314	\$318	\$318	\$1,863	\$318
Overall net debt per capita	\$313	\$314	\$318	\$318	\$3,285	\$318
Direct net debt to property value	1.6%	1.6%	1.7%	1.7%	4.0%	1.7%
Overall net debt to property value	1.6%	1.6%	1.7%	1.7%	7.0%	1.7%
Debt service ratio	5%	5%	5%	5%	25%	5%
Incremental property tax burden	N/A	0.00%	0.01%	0.01%	1.00%	0.01%

Print
Return
Help